FACT SHEET

UE Systems Commercializes Improved Portable Ultrasonic Leak Detector

Finding a way to detect hazardous fluid leaks in critical launch and ground support equipment became vital after the Space Shuttle fleet was grounded in 1991 with leaks in the main engine compartments. Kennedy Space Center (KSC) engineers developed new ultrasonic leak detectors and searched for leaks in the aft engine compartments. The leaks were found and fixed, but the detectors did not provide long-range sensitivity and reliability. Later, further enhancements were made and the detectors were used to find leaks in the solid rocket boosters.

UE Systems, Inc. is successfully commercializing an improved ultrasonic leak detector based on the technology developed at KSC. The Elmsford, New York company is offering the LRM-2 Long Range Module, a plug-in module for the firm's existing product line called the Ultraprobe™. The module uses a unique parabolic-shaped collection horn to enhance leak detection from a distance. The horn is reliable, sensitive, and increases versatility while it discriminates against background noise. The parabolic design of the amplifying chamber reflects all signals directly to the transducer with minimal acoustic energy loss. The signal from the transducer is pre-amplified and transferred to the Ultraprobe housing where it is amplified again. The captured audio signal is then sent to headphones or a spectrum analyzer for further analysis or data storage. This "double amplification" effect works acoustically like a telescope and magnifies the leak for easier detection. "The Ultraprobe had an established customer base and by creating a simple and inexpensive plug-in module, we were able to get it to the widest possible market the quickest and least expensive," stated Terrence O'Hanlon, President of UE Systems.

Instead of producing an entirely new instrument, UE Systems utilized NASA's innovative circuitry, improved transducers, and unique collecting horn to create the plug-in module that provides a high degree of reliability and sensitivity. The unit is small, lightweight and rugged compared to other systems. One of the most common factory applications is to detect leaks in pressure and vacuum systems. "Compressed air leak detection at a distance, electrical connections on overhead power transmission lines, and pressurized overhead telephone cables are a few of the primary applications to use the LRM-2 module," stated Mr. O'Hanlon. He further declared, "the LRM-2 Long Range Module doubles the distance a leak is detectable." The user can remain safely on the ground while scanning overhead lines and other inaccessible areas for leaks that might otherwise go undetected. The ultrasonic instrument provides testing capabilities that range from simple leak detection to more complex mechanical analysis.

NASA and the military are using the new detectors to find leaks on flight hardware and in fuel tank tests, as well as ground support equipment for future Shuttle missions.

The opportunity is available for saving American manufacturers money by providing increased energy conservation. In some factories in the U.S. there is a waste of energy associated with compressed air systems. Using the LRM-2 to detect possible air leaks could save companies thousands of dollars in energy costs.

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